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Assembly

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# Northern Ireland and Net Zero

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The following paper is provided in response to an AERA Committee request for information on net zero targets across the UK, Republic of Ireland (RoI), and particularly Wales; it also examines departmental programmes aimed at addressing climate change across different sectors in Northern Ireland (NI). Finally, examples of “greenhouse gas removing technologies” are provided, as mentioned in the Climate Change Committee Letter on Northern Ireland’s contribution to UK Net Zero and DAERA’s response Letter.

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# 1 Background

In May 2019, the Committee on Climate Change (CCC), a non-departmental public body that advises the UK Government on climate change, recommended that the UK should aim to be net zero on all greenhouse gases by 2050. This would keep the UK in line with the commitments it made as part of the 2016 Paris Agreement to keep global warming under 2 degrees. The CCC has also advised on devolved jurisdictions contribution to net zero: Scotland, Wales and more recently, NI.

A number of nations have passed laws formally establishing net zero targets: Sweden and Scotland by 2045, and the UK (as a whole), France, Denmark, Hungary and New Zealand by 2050<sup>1</sup>. Similar draft legislation has been proposed in other countries e.g. [Spain](#)<sup>2</sup>, and Canada in November 2020<sup>3</sup>.

Some countries have set targets, but are yet to pass these in law. For example, in 2016, Norway was among one of the first parliaments in the world to agree carbon neutrality (where climate reductions = emissions) by 2030 and 90-95% reductions by 2050. However, these targets have not been adopted by the government and not enshrined in law.<sup>4</sup>

Bhutan is one of the only countries in the world considered carbon negative. Having a low population (<1 million), over 70% tree cover and all power generated by hydro-power means it absorbs more CO<sub>2</sub> (about 7 million tonnes/year) than it emits (around 2 million tonnes/year). It also limits tourists and places environmental protection as key in its Gross National Happiness Index, which is at the centre of all its political decisions.<sup>5</sup>

## ***NI in context***

Northern Ireland accounted for 4.3% of total UK greenhouse gas emissions in 2018 and produced the equivalent of 10.3 tonnes of CO<sub>2</sub> per person compared with a UK figure of 6.8 tonnes of CO<sub>2</sub> per person.

The UK makes up approximately 1% of global emissions. Based on estimates- NI's share of global emissions is around 0.04%<sup>6</sup>.

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<sup>1</sup> Ibid and Grantham Institute [online] *Climate Change Laws of the World* <https://www.climate-laws.org/>

<sup>2</sup> And Institute for Government *Explainers: Net Zero Target* <https://www.instituteforgovernment.org.uk/explainers/net-zero-target>

<sup>3</sup> Climate Home News [accessed 24/02/2021] <https://www.climatechangenews.com/2019/06/14/countries-net-zero-climate-goal/>

<sup>4</sup> Ibid and Climate Action Tracker [accessed 24/02/2021] *Norway* <https://climateactiontracker.org/countries/norway/pledges-and-targets/>

<sup>5</sup> GVI UK *Why Bhutan is the only carbon-negative country in the world* <https://www.gvi.co.uk/blog/bhutan-carbon-negative-country-world/>

<sup>6</sup> Northern Ireland does not submit annual inventories to the United Nations Framework Convention on Climate Change (UNFCCC), therefore there is no reference for global CO<sub>2</sub> emissions based on national inventory reporting. However, DAERA provided this figure using data sourced from the World Resources Institute on total 'world greenhouse gas emissions' (provided by email correspondence to AERA Committee (18/08/2020))

## 1.1 What is net zero?

Net zero refers to achieving a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. There are two different routes to achieving net zero, which work in tandem: reducing existing emissions and actively removing greenhouse gases<sup>7</sup>.

A *gross-zero* target would mean reducing all emissions to zero. According to the Institute for Government, this is not realistic, so instead the *net-zero* target recognises that there will be some emissions but that these need to be fully offset, for example through natural carbon sinks such as oceans and forests. Research is on-going into using artificial carbon sinks to remove carbon from the atmosphere<sup>8</sup>.

When the amount of carbon emissions produced are cancelled out by the amount removed, the UK will be a net-zero emitter. The lower the emissions, the easier this becomes.<sup>9</sup>

## 2 Current targets/net zero targets

### 2.1 NI

NI does not have specific climate change legislation, and it contributes to the UK target under the Climate Act 2008. However, climate change legislation is being considered for NI, based on advice from the CCC in relation to NI's contribution to the UK net zero by 2050. As shown in Table 1, the latest advice from the CCC suggests an overall 82% reduction of all GHGs by 2050, with an interim of 48% by 2030. It has also suggested supplementary targets for CO<sub>2</sub> (net zero by 2050) or all GHG excluding methane (up to 96% by 2050). That being said, advice from the CCC is not final, and exactly what targets will be included is the decision of the DAERA Minister.

**Table 1: Possible targets in Northern Ireland Climate Change legislation.**

	All greenhouse gases	CO <sub>2</sub> only	All GHGs excluding agricultural methane emissions	All GHGs excluding agricultural, land use and waste methane emissions
2030	<b>48% reduction</b>	56% reduction	53% reduction	52% reduction
UK Sixth Carbon Budget period (2033-2037)	<b>60% reduction</b>	70% reduction	67% reduction	67% reduction
2040	<b>69% reduction</b>	83% reduction	78% reduction	79% reduction
2050	<b>82% reduction</b>	Net Zero	93% reduction	96% reduction

Source: CCC Letter (Dec, 2020)<sup>10</sup>

<sup>7</sup> Institute for Government Explainers: Net Zero Target <https://www.instituteforgovernment.org.uk/explainers/net-zero-target>

<sup>8</sup> *ibid*

<sup>9</sup> *ibid*

<sup>10</sup> CCC (December 2020) Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA <https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/>

## 2.2 UK and RoI

As illustrated in Table 2, the Climate Change Act 2008 committed the UK to an 80% reduction in carbon emissions relative to the levels in 1990, to be achieved by 2050. In June 2019, secondary legislation was passed that extended that target to “at least 100%”.

Current carbon budgets exclude emissions from international aviation and shipping (those produced by planes and ships while in UK territorial waters and airspace). However, advice from the CCC is that the Sixth Carbon Budget and final net zero target should account for such emissions.<sup>11</sup>

The Scottish Government has set itself a target of net zero by 2045 in line with recommendations by the CCC.<sup>12</sup> It has been considered as having more potential capacity to remove emissions from the atmosphere than the rest of the UK due to its abundant land, with potential for afforestation (planting trees to create forests, which are natural carbon sinks).<sup>13</sup>

Wales currently has an 80% target by 2050 under the Wales Environment Act 2016. In 2019, Wales committed to setting a 95% reduction target in 2050. However the Welsh Government has committed to net zero by 2050 off the back of its latest advice from the CCC in relation to net zero by 2050<sup>14</sup>.

The RoI is legislating for net zero by the end of 2050 through its National 2050 Climate Objective under its [Draft Climate Action and Low Carbon Development \(Amendment\) Bill 2020](#). And NZ has legislated for net zero by 2050, including a biogenic methane target, under its [Climate Change Response \(Zero Carbon\) Amendment Act 2019](#).

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<sup>11</sup> CCC (2020) Sixth Carbon Budget Report (p.15 and 19) <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

<sup>12</sup> Scottish Government, *Climate change*, GOV.SCOT [www.gov.scot/policies/climate-change/reducing-emissions](http://www.gov.scot/policies/climate-change/reducing-emissions)

<sup>13</sup> Committee on Climate Change, *Net Zero: The UK's contribution to stopping global warming*, 2 May 2019, [www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming](http://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming)

<sup>14</sup> Welsh Government *Wales commits to net zero by 2050, but sets out ambitions to get there sooner* <https://gov.wales/wales-commits-net-zero-2050-sets-out-ambitions-get-there-sooner>

**Table 2: Net zero targets**

	UK (all 4 regions including NI)	NI	Scotland	Wales	Rol	NZ
Legislation	<a href="#">Climate Change Act 2008</a> as (as amended by <a href="#">UK Climate Change Act 2008 (2050 Target Amendment) Order 2019</a> )	UK Climate Change Act 2008	<a href="#">Climate Change Act 2009</a> (as amended by the <a href="#">Climate Change (Emissions Reduction Targets) Act 2019</a> )	Wales Environment Act 2016 to be amended by <a href="#">The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021</a>	<a href="#">Draft Climate Action and Low Carbon Development (Amendment) Bill 2020</a>  The Bill completed pre-legislative scrutiny by the Joint Committee on Climate Action December 2020 <sup>15</sup>	<a href="#">Climate Change Response (Zero Carbon) Amendment Act 2019</a>
Targets	<b>Net zero target:</b> 100% emissions reduction by 2050 compared to 1990 levels (this includes contribution from all 4 regions).  <b>Interim target</b> - 34% reduction by 2020 (s.5, 1(a))	Must contribute to the UK 2050 net zero target.  Suggested contribution of 82% by 2050 has not been endorsed by NI Executive as yet.	<b>Net zero</b> by 2045  <b>Interim targets:</b> <ul style="list-style-type: none"> <li>75% by 2030</li> <li>90% by 2040<sup>16</sup></li> </ul>	80% by 2050 under Environment Act 2016  However, new regulations <sup>17</sup> have been laid (see s.2.1.1 of this paper), to come into force 12 March 2021 to: <ul style="list-style-type: none"> <li>amend the 2050 target from 80% to net zero.</li> <li>change the 2030 target to 63%</li> </ul>	The Bill provides for net zero by the end of 2050 through its National 2050 Climate Objective (s3): <i>3(1) The State shall pursue the transition to a climate resilient and climate neutral economy by the end of the year 2050" ('the national 2050 climate objective').</i> <sup>18</sup>	The Act has two 2050 targets: <ul style="list-style-type: none"> <li>Zero ghg emissions</li> <li>Reduce biogenic methane to 24-47% below 2017 levels.</li> </ul> An interim 2030 target for biogenic methane to 10% below 2017 levels

<sup>15</sup> Oireachtas, Committee on Climate Action <https://www.oireachtas.ie/en/committees/33/climate-action/> and DECC *Climate Action and Low Carbon Development (Amendment) Bill 2020* <https://www.gov.ie/en/publication/984d2-climate-action-and-low-carbon-development-amendment-bill-2020/>

<sup>16</sup> *Climate Change (Emissions Reduction Targets) (Scotland) Act 2019* which amends the 2009 Act

<sup>17</sup> [The Environment \(Wales\) Act 2016 \(Amendment of 2050 Emissions Target\) Regulations 2021](#)

<sup>18</sup> For more information see Irish Government Press Release (7 October 2020) : *Government publishes new climate law which commits Ireland to net-zero carbon emissions by 2050* <https://www.gov.ie/en/press-release/aecb3-government-publishes-new-climate-law-which-commits-ireland-to-net-zero-carbon-emissions-by-2050/>

	UK (all 4 regions including NI)	NI	Scotland	Wales	Rol	NZ
				(currently 45%) and the 2040 target to 89% (currently 67%).	The Joint Committee on Climate Action suggested in its Pre-legislative report – 51% reduction in carbon emissions (below 2018 levels) by 2030 <sup>19</sup>	
<b>Carbon budgets</b>	<p>These put a cap on the amount of GHGs the UK can emit over a 5 year period<sup>20</sup>.</p> <p>4<sup>th</sup> carbon budget: 2023–2027 : 1,950 MtCO<sub>2</sub>e<sup>21</sup> (or 50% by 2025<sup>22</sup>)</p> <p>5<sup>th</sup> carbon budget: 2028-2032: 1,725 MtCO<sub>2</sub>e.</p>	Under the Climate Change Act the 5 <sup>th</sup> Carbon budget (2028-2032) for NI is 35% by 2030 <sup>25</sup>	<p>The <a href="#">Climate Change (Emissions Reduction Targets) (Scotland) Act 2019</a> provide annual reduction each year to 2050:</p> <p>2020 – 56% (the interim target)</p> <p>2021 – 57.9%</p> <p>2022 – 59.8%</p> <p>2023 – 61.7%</p> <p>2030 – 75%</p> <p>2040 – 90%</p> <p>(Each 10 year corresponds with the interim target)</p> <p>The full list up to net-zero in 2045 is provided <a href="#">here</a></p>	<p><i>Changes to be made under <a href="#">The Climate Change (Carbon Budgets) (Wales) (Amendment) Regulations 2021</a> which sets Wales’ new third carbon budget in line with reaching net zero by 2050:</i></p> <ul style="list-style-type: none"> <li>• 2021-2025 - 37% lower than the baseline.</li> <li>• 2026-2030 - 58% lower than the baseline.</li> </ul>	<p>S.6 provides for 5-year carbon budgets starting 2021. They will include all greenhouse gases.</p> <p><b>Sector specific:</b> Each 5 year carbon budget will allocate emissions ceilings to all relevant sectors (known as ‘decarbonisation target ranges’) – S.6C.</p> <p>S.6D allows for the banking and borrowing of emissions from one budget period to another</p>	<p>5 yr Carbon budgets are to be set. The first three emissions budgets will be set by the end of 2021.</p> <p>Currently a Provisional Emissions Budget (PEB) of 354 MtCO<sub>2</sub>e 2021-2025 is in place until the new budgets are set.<sup>26</sup></p>

<sup>19</sup> Oireachtas, *Joint Committee on Climate Action to discuss reducing Ireland’s Carbon Emissions by 51 per cent by 2030* <https://www.oireachtas.ie/en/press-centre/press-releases/20210222-joint-committee-on-climate-action-to-discuss-reducing-ireland-s-carbon-emissions-by-51-per-cent-by-2030/>

<sup>20</sup> The Committee on Climate Change provides advice on carbon budgets. The Government considers this advice before making its own recommendations to Parliament

<sup>21</sup> Carbon budget Order 2011 <http://www.legislation.gov.uk/ukxi/2011/1603/made>

<sup>22</sup> CCC 4<sup>th</sup> Carbon Budget Advice p.99 [https://www.theccc.org.uk/wp-content/uploads/2010/09/CCC-4th-Budget-Book\\_with-hypers.pdf](https://www.theccc.org.uk/wp-content/uploads/2010/09/CCC-4th-Budget-Book_with-hypers.pdf)

<sup>25</sup> DAERA (2020) Climate Change Bill Discussion Document (p.15) <https://www.daera-ni.gov.uk/consultations/climatechangediscussion>

<sup>26</sup> NZ <https://www.mfe.govt.nz/reforming-nzets-emissions-reduction-targets-and-emissions-budgets>

	UK (all 4 regions including NI)	NI	Scotland	Wales	Rol	NZ
	<p>(Or 57% by 2030 compared to 1990 levels).<sup>23</sup></p> <p><b>The 6<sup>th</sup> carbon budget:</b> The <a href="#">CCC has advised</a> a limit of 965 MtCO<sub>2</sub>e. This equates to a 78% reduction from 1990 to 2035.</p> <p>This has yet to agreed and legislated for by the UK Government. Whether the older budgets will be revised is not known yet. However, the CCC feels it's not necessary to reset them through law<sup>24</sup></p>				<p>to offset any lack of reductions in a period.</p> <p>The first budgets will span 2021-2035.</p> <p>Budgets are to be proposed by the Advisory Council and finalised by the Minister. Then approved by the Government and the Oireachtas and may be presented to an Oireachtas joint Committee for consideration.</p>	

<sup>23</sup> [Carbon Budget 2016 Order](#) Also see Advice on the 5th Carbon Budget from the CCC <https://www.theccc.org.uk/publication/the-fifth-carbon-budget-the-next-step-towards-a-low-carbon-economy/>

<sup>24</sup> CCC advice on 6<sup>th</sup> budget p.16 <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf>



## 2.3 Wales

### 2.3.1 Change in CCC advice

Previously, in 2019, the Welsh Government had [said it intended to legislate for 95%](#) with an ambition to meet net zero. This was based on 2019 advice from the CCC which felt Wales would have a much more difficult path to reach net zero by 2050, in part because of its high agricultural emissions.<sup>27</sup> However, this target was not written into law.

Legislation is now being revised in light of the [new advice from the CCC in December 2020](#) which states that Wales should now aim for net zero by 2050. This was not due to a sudden change in heart. Even when the 95% 2050 target was suggested, the Welsh Government stated it would continue to work with the CCC to identify how Wales might go beyond 95% in 2050.<sup>28</sup>

The latest CCC advice in December 2020 states that:

*When the Committee provided its 2019 advice, we demonstrated that any negative economic impact of achieving very deep emissions reductions in Wales was likely to be small and the overall impact could turn out to be positive. Our analysis of the full pathway to Net Zero in Wales for this report reinforces that finding.<sup>29</sup>*

That being said, the CCC recognises this will not be without its challenges:

*But significant gaps remain. Despite good progress, Wales is not yet on track to meet its existing, less stringent, 80% emissions target. A cohesive, economy-wide strategy for 2050, that ties in with UK-wide plans, is urgently needed if Wales is to reach Net Zero by that date<sup>30</sup>.*

However, the impact of net zero on Welsh agriculture was one of the main reasons for advising the 95% target in 2019. In its latest advice, the CCC has stated that one of the key actions to reaching net zero is with the transformation of more farmland to woodland, which could bring revenue opportunities to farmers: *“With the right policies this can be a new source of revenue to Welsh farmers.”*

It also details how recent policy developments may aid the transition to net zero. For example Wales’ replacement CAP scheme, ‘Sustainable Farming’, aims to transition to

<sup>27</sup> Committee on Climate Change, *Net Zero: The UK’s contribution to stopping global warming*, 2 May 2019, [www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/](http://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/)

<sup>28</sup> UK Government (October 2020). Committee on Climate Change’s 2020 progress report: government response p.50 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/928005/government-response-to-ccc-progress-report-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/928005/government-response-to-ccc-progress-report-2020.pdf)

<sup>29</sup> CCC (2020) *The path to Net Zero and progress on reducing emissions in Wales* <https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/> p.13

<sup>30</sup> CCC (2020) *The path to Net Zero and progress on reducing emissions in Wales* <https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/>

rewarding farmers more for public goods including mitigating and adapting to climate change.<sup>31</sup>

### 2.3.2 Proposed new targets

The Welsh Government accepted the CCC's 2020 advice on net zero by 2050 and has produced the following regulations, expected to come into force 12 March 2021:

- [\*The Environment \(Wales\) Act 2016 \(Amendment of 2050 Emissions Target\) Regulations 2021\*](#) - amends the 2050 target from 80% to net zero.
- [\*The Climate Change \(Interim Emissions Targets\) \(Wales\) \(Amendment\) Regulations 2021\*](#)- changes the 2030 target to 63% (currently 45%) and the 2040 target to 89% (currently 67%).
- [\*The Climate Change \(Carbon Budgets\) \(Wales\) \(Amendment\) Regulations 2021\*](#)- sets Wales' third carbon budget
- [\*The Climate Change \(Net Welsh Emissions Account Credit Limit\) \(Wales\) Regulations 2021\*](#)- set a limit on the amount of carbon units that may be credited to the net Welsh emissions account in accordance with section 33(4) of the Environment (Wales) Act 2016.

### 2.3.3 Potential costs for Wales

The 2020 CCC advice suggests the following investment costs would be required by Wales in order to reach net zero by 2020:

***Total low-carbon investment in Wales will need to increase to around £3 billion by 2030, continuing at around that level through to 2050. That compares to total low-carbon investment in the UK of around £50 billion. The increase is deliverable, primarily by private companies and individuals, alongside other investment, provided effective policy is put in place.***<sup>32</sup>

However, it is of the opinion that most of this can be recouped and paid for at the UK level:

***Much of the investment spending can be recouped through lower operating costs. These savings, many of which relate to reduced reliance on imported fossil fuels, will rise to around £800 million by 2030 and £2.5 billion by 2050.***

*Our estimate of annualised resource costs is less than £2 billion per year in Wales for the entirety of the period 2020 to 2050. That is lower than our 2019 estimate for the cost of reaching Net Zero emissions (we previously*

<sup>31</sup> P.34 CCC advice <https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/>

<sup>32</sup> P.99 ibid

*estimated costs to be around £3-5 billion by 2050).*

***Many of the costs of reducing emissions in Wales will likely be paid for at UK level and/or socialised across the whole of the UK.<sup>33</sup>***

It is not quite clear from the advice what is meant by “the right/effective policies” and exactly what costs are expected to be incurred by individuals in transitioning to more carbon neutral farming practices. Particularly whether this would offset any potential rewards earned under ‘Sustainable Farming’ policy.

Costs for Wales may not be directly comparable to NI, based on the differences in farming practice. What the CCC is suggesting is a major change in farming practices in Wales in order to reach net zero. This change may be even more considerable and costly for NI given that the majority of farms are pasture/livestock compared to Wales’ more arable-based system.

## 2.4 Considerations

- ***Is the suggested target for NI presented in a similar manner to that of Wales, with the idea of considering working towards a net zero target by 2050?***
- ***NZ legislates for GHG net zero by 2050 and a biogenic methane target of 24-47% below 2017 levels, and 10% by 2030 under the [Climate Change Response \(Zero Carbon\) Amendment Act 2019](#).***
- **The CCC has suggested supplementary GHG targets excluding methane. Is this due to potential impacts on agriculture and production?**
- ***The RoI sets sector specific carbon budgets (decarbonisation target ranges); is this something that could be considered for NI to give a more statutory joined up/holistic approach to addressing climate change across sectors?***

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<sup>33</sup> *ibid*

### 3 Sources of emissions

The following section explores the main sources of emissions in NI. Sources of emissions are reported in NI's Greenhouse Gas Inventory (see Box 1)

#### **Box 1: Greenhouse Gas Inventory**

The UK ratified the United Nations Framework Convention on Climate Change (UNFCCC) in December 1993, and the Convention came into force in March 1994. Parties to the Convention are committed to develop, publish, and regularly update national emission inventories of greenhouse gases (GHGs). In line with this, GHGs in NI are recorded by DAERA and reported in the Greenhouse Gas Inventories. These feed into the United Kingdom's [National Inventory Report](#) (NIR). The latest figures are for 1990-2018, and these form the UK's 2020 submission to the UNFCCC. They also form the [UK's submission](#) under the [Kyoto Protocol](#).

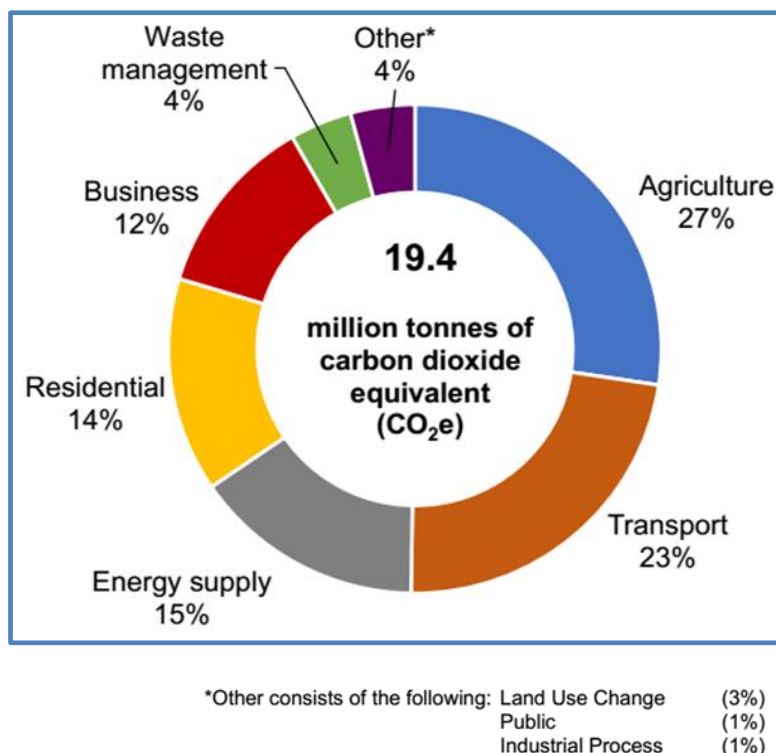
The latest [GHG Inventory for NI](#) (1990-2018) reports that:

- The UK makes up approximately 1% of global emissions. Based on estimates- NI's share of global emissions is 0.04%<sup>1</sup>.
- Northern Ireland accounted for 4.3% of total UK greenhouse gas emissions in 2018 and produced the equivalent of 10.3 tonnes of CO<sub>2</sub> per person compared with a UK figure of 6.8 tonnes of CO<sub>2</sub> per person.
- In total, the UK reduced emissions by 43% between the base year and 2018. England and Scotland reduced emissions by 46% and 45% respectively. Wales and Northern Ireland reduced emissions by 31% and 20% respectively.
- In 2018, Northern Ireland's greenhouse gas emissions were estimated to be 19.4 million tonnes of carbon dioxide equivalent. This was a decrease of 2% compared with 2017, and a decrease of 20% compared to the base year (1990).
- Carbon dioxide accounted for 68% of all greenhouse gas emissions in Northern Ireland (13.1 MtCO<sub>2</sub>e) in 2018.

### 3.1 Sources of emissions NI

The largest sectors in terms of emissions in 2018 were agriculture (27%), transport (23%) and energy supply (15%), as shown in Figure 1.

**Figure 1: Greenhouse gas emissions by sector, 2018**



Source: DAERA<sup>34</sup>

### **Ammonia**

There is growing concern about the impact of ammonia emissions from livestock on habitats. According to the Sustainable Agricultural Land Management Strategy for NI, “the majority of NI protected habitats have been reported as being damaged or under threat of damage from nitrogen deposition”.<sup>35</sup> Ammonia emissions are measured across the UK by the UK National Ammonia Monitoring Network (NAMN).<sup>36</sup> NI is the only part of the UK in which ammonia emissions are not continuing to decline.<sup>37</sup> There is a Code of Good Agricultural Practice in place for reducing ammonia emissions, by

<sup>34</sup> DAERA (2020) Northern Ireland Greenhouse gas statistics 1990-2018 statistical bulletin (p.7). Available at <https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2018-statistical-bulletin>

<sup>35</sup> A Sustainable Agricultural Land Management Strategy for NI (p.26) <https://www.daera-ni.gov.uk/publications/sustainable-agricultural-land-management-strategy-report-and-executive-summary>

<sup>36</sup> UK Ammonia Monitoring Network, UK Centre for Ecology and Hydrology website. (accessed 19/02/2021).

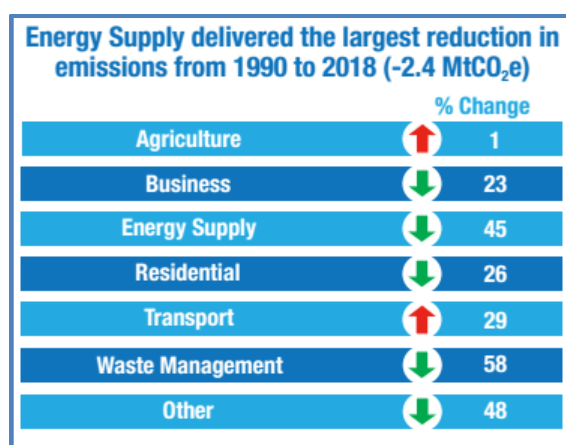
<sup>37</sup> A Sustainable Agricultural Land Management Strategy for NI (p.13) <https://www.daera-ni.gov.uk/publications/sustainable-agricultural-land-management-strategy-report-and-executive-summary>

CAFRE<sup>38</sup>. However, the Sustainable Agricultural Land Management Strategy suggests that assessments of new agricultural developments may need to be intensified to keep in line with the EU's 2030 ceiling for the UK equating to 16% reduction in ammonia emissions (since 2005).<sup>39</sup>

Further information on the impacts of ammonia on the environment can be found in [Code of Good Agricultural Practice for the Reduction of Ammonia Emissions, CAFRE](#)

### 3.1.1 Trends

**Figure 3: % change in emissions per sector**



Source: DAERA<sup>40</sup>

Most sectors showed a decreasing trend since the base year. The largest decreases, in terms of tonnes of carbon dioxide equivalent, were in the energy supply, waste management and residential sectors (figure 3). According to DAERA, these were driven by improvements in energy efficiency, fuel switching from coal to natural gas, which became available in the late 1990s, and the introduction of methane capture and oxidation systems in landfill management<sup>41</sup>. However, agriculture showed a 1% increase since 1990 and transport a staggering 29% increase. DAERA attributes these increases due to growth in demand for transport, despite improvements in efficiency of vehicles and increased emissions from cattle due to increased livestock numbers<sup>42</sup>.

<sup>38</sup> [Code of Good Agricultural Practice for the Reduction of Ammonia Emissions, CAFRE](#)

<sup>39</sup> DEFRA Emissions of air pollutants in the UK, 1970 to 2019 – Ammonia (NH<sub>3</sub>)  
<https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-1970-to-2018-ammonia-nh3>

<sup>40</sup> DAERA (2020) Northern Ireland Greenhouse gas statistics 1990-2018 statistical bulletin (p.7). Available at <https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2018-statistical-bulletin>

<sup>41</sup> DAERA (2020) Northern Ireland Greenhouse gas statistics 1990-2018 statistical bulletin (p.3). Available at <https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2018-statistical-bulletin>

<sup>42</sup> Ibid (p.8)

According to the [2019 UK greenhouse gas emissions: final figures - statistical release](#), another sector to consider in terms of increases is the land-use change sector. While its net contributions are relatively small, trends have shown a marked increase (see Box 2)

#### **Box 2: Land-use Change Sector**

Northern Ireland is the only UK region where the land-use change sector acts as a net emitter of greenhouse gas emissions. England, Scotland and Wales are all classified as 'sinks' that absorb carbon.

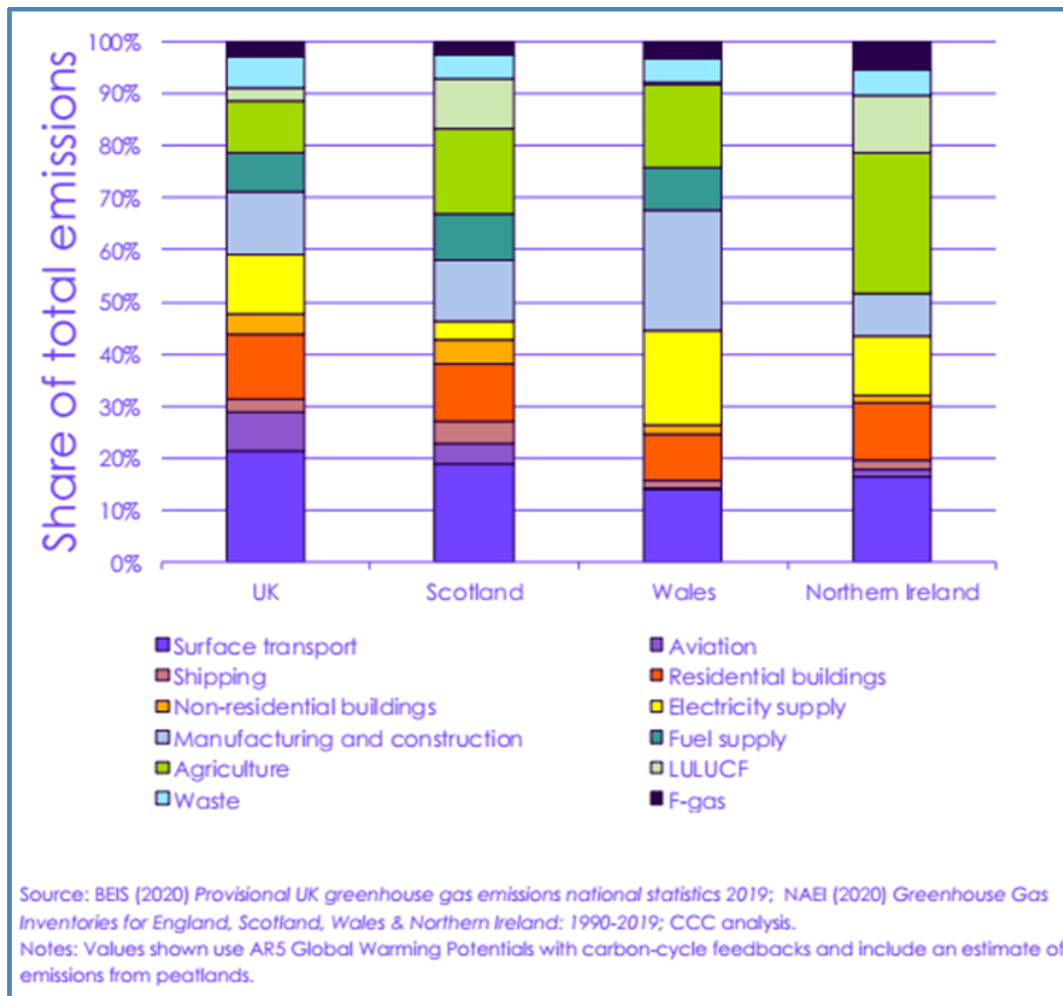
In NI, while the land-use change sector makes a relatively small net contribution to emissions (2.6%), contributions have increased by 32.5% since 1990. According to the [2019 UK greenhouse gas emissions: final figures - statistical release](#) (p.8), this mainly reflects the changes in carbon stock associated with land conversions between cropland, grassland, settlements and forest land. The largest growth in emissions since 1990 is from grassland converted to settlements and cropland converted to grassland in Northern Ireland.

## 3.2 Comparison with the rest of the UK

According to Figure 2:

- Transport makes the biggest contribution to overall UK emissions at 21%. This compares to Wales at 14% and NI at 16%. However, the CCC does not attribute these lower figures to a more carbon-efficient surface transport sector. Other sources of emissions, such as agriculture in NI, increase the total national emissions that transport emissions are compared to. This makes the share of transport emissions of the total smaller. Per person, surface transport emissions are actually higher in Northern Ireland than the UK average.
- Agriculture makes the largest contribution to emissions in NI with 27%, this is also the largest compared to the rest of the UK at 10%, and Scotland and Wales both at 16%. High levels are attributed to high numbers in livestock and pastureland compared to the rest of the UK.
- Manufacturing and construction makes the largest contribution to emissions in Wales at over 20% compared to the rest of the UK at around 10% and under.
- Transport, followed closely by agriculture, makes the biggest contribution to emissions in Scotland.
- NI has relatively low emissions from manufacturing, aviation and fuel supply compared to the rest of the UK.

**Figure 2: Sectoral emissions in 2018 for Scotland, Wales and NI compared to the UK.**



Source CCC Letter<sup>43</sup>

### 3.2.1 Latest 2019 Figures

Latest figures from 2019 for the UK as a whole still show transport as the highest (with an increase to 27%)<sup>44</sup>. This is followed by:

- energy supply (generating electricity from burning fuels such as coal, oil and natural gas) with 21%;
- business (commercial use of electricity) with 17%;
- residential sector (heating homes) with 15%;
- agriculture with 10%;
- The other 10% was attributable to the remaining sectors: waste management, industrial processes, the public sector and the land use, land use change and

<sup>43</sup> CCC (December 2020) **Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA**  
<https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/>

<sup>44</sup> [2019 UK greenhouse gas emissions: final figures - statistical release](#)



forestry (LULUCF) sector which includes both sinks and sources of emissions (see Box 2).

### 3.3 Comparison with Rol

The emissions profile in NI is similar to the Republic of Ireland, with agriculture having the largest contribution to GHGs. In fact, Rol's proportion of GHGs from agriculture is said to be the largest in Europe, yet its food products (milk and beef) have one of the lowest carbon footprints (emissions per unit of output or "carbon intensity") internationally.<sup>45</sup>

One of the aims of the Irish Agriculture and Food Development Authority is carbon neutral farming by 2050. This means agriculture would need to lock away as much GHGs as it emits, resulting in zero net emissions.<sup>46</sup>

## 4 Programmes

The following section considers some of the main programmes that aim to address climate change across NI.

All departments and sectors bear a collective responsibility to address climate change. The following provides a breakdown of responsibility across NI departments. Please note this provides a summary and should not be taken as a complete account of all department responsibilities. In summary<sup>47</sup>:

- DAERA takes the lead in terms of climate adaptation, mitigation, monitoring and reporting. It bears the responsibility for ensuring our natural environment and farming practices can be resilient to climate change. This is through protecting our biodiversity and habitats, while encouraging sustainable land management and food production practices from our agriculture sector.
- Department for Infrastructure (DfI) has responsibility for addressing climate change through our planning system, transport and infrastructure, water provision and mitigation against flooding.
- Department for the Economy (DfE) has strategic responsibility for tourism, energy and business support. It bears responsibility for climate change through promoting

<sup>45</sup><http://www.bordbia.ie/industry/events/SpeakerPresentations/2014/MeatMarketProspectsSeminar2014/Efficient%20Farming%20-%20Dr.%20Roger%20Schulte.%20Teagasc.pdf> in A Sustainable Agricultural Land Management Strategy for NI (p.27) <https://www.daera-ni.gov.uk/publications/sustainable-agricultural-land-management-strategy-report-and-executive-summary>

<sup>46</sup> Can Irish Agriculture be Carbon-Neutral by 2050? <https://www.teagasc.ie/news--events/news/2013/can-irish-agriculture-becarbon-neutral-by-2050.php> in A Sustainable Agricultural Land Management Strategy for NI (p.27) <https://www.daera-ni.gov.uk/publications/sustainable-agricultural-land-management-strategy-report-and-executive-summary>

<sup>47</sup> Information used from NI climate Change Adaptation Plan Chapter 6 <https://www.daera-ni.gov.uk/publications/northern-ireland-climate-change-adaptation-programme-2019-2024>

the efficient use of energy by the voluntary and community sector and local businesses.<sup>48</sup>

- Department of Finance (DoF) produces building regulations in NI, which include energy efficiency, ventilation, moisture standards etc. all with the aim of burning less fossil fuels and adapting to climate change. It has responsibility for promoting efficient use of energy by public bodies.<sup>49</sup>
- Department for Communities (DfC) has strategic responsibility for equality and poverty issues, including fuel poverty, the historic environment, housing and the community and voluntary sectors. DfC contributes to addressing climate change through its responsibility for promoting efficient use of energy in the domestic and housing sector.<sup>50</sup>
- Department of Health (DoH) concerns itself with providing a health care system that can respond to the impact of climate change, both in terms of the direct impacts on health (extreme weather and over/under heating, air quality etc.) and impact on the delivery of the service (due to extreme weather events).

It is clear from NI's GHG emission sources that multiple sectors contribute to climate change both directly or indirectly. Delivering emissions reductions requires action across the power, buildings and industry, transport, agriculture and land use, and waste sectors, and can only be achieved through close co-ordination between the UK Government, Executive, and multiple government departments in NI.

## 4.1 Holistic approach

The table in Appendix 1 (p.30) provides examples of departmental programmes aimed at addressing climate change across different sectors in NI. The table does not attempt to explicitly provide ***all*** programmes/initiatives/strategies that relate to addressing climate change directly or indirectly. That being said, it demonstrates the multitude of programmes across NI government departments in a rather fragmented way. While there is a cross departmental duty under the UK Climate Change Act 2008 for all departments to prepare a collective Adaptation Plan (Appendix 1 p.32), through identified risks, there appears to be a lack of a joined up strategic approach for working towards the most up to date aims, objectives, targets and mitigation measures. Some programmes are very much out of date, and are not suitable for reaching more recent ambitious targets. Some appear to be more focused on a reactionary response to climate change, rather than mitigation. We are at a time of significant policy transition, with many strategies and programmes coming to the end of their term and Brexit and COVID re writing some of our priorities. Therefore, it could be argued that it is essential to have a more joined up approach so that all departments and sectors are

<sup>48</sup> Energy Management Strategy and Action Plan to 2030 (p.30) <https://energysavingtrust.org.uk/programme/nisep/>

<sup>49</sup> *ibid*

<sup>50</sup> Energy Management Strategy and Action Plan to 2030 (p.30) <https://energysavingtrust.org.uk/programme/nisep/> and NI Climate Change Adaptation Strategy p.51 <https://www.daera-ni.gov.uk/publications/northern-ireland-climate-change-adaptation-programme-2019-2024>

working towards a common goal so they know where they stand, exactly what is expected of them and when it is required.

## 4.2 Considerations:

- Under the Climate Change Act 2008, there is a voluntary approach to adaptation reporting by public authorities. In comparison to Scotland, which has a legal duty for mitigation and adaptation reporting by public authorities in the Scotland Climate Change Act 2009. *As mentioned in section 2.4, the ROI provides for sector specific carbon budgets (decarbonisation budgets).*
- **What priorities will a NI Climate Act give to a more joined up and holistic response across NI Departments and sectors to climate change adaption and mitigation?**

The Green Growth Strategy (as detailed in Appendix 1 p.33):

- ***Is this considered the main holistic approach to addressing climate change across departments and sectors in NI?***
- ***Will there be more detail on the Strategy and when is it likely to be published?***
- ***Will it shape a Climate Change Act, or be shaped by a Climate Change Act, and NI's contribution to net zero?***

Updates of programmes to reflect most recent climate change targets and suggested net zero contribution:

- ***Will there need to be an update to current strategies/ plans?***
- ***For example the Going for Growth Strategy (2013). Last published progress update was 2016. Are there plans for a new updated Strategy?***
- ***If so, what will the aim of the successor be, will the focus be sustainable growth in line with contributing to more ambitious climate change targets?***

Until recent 2020 projections by DAERA, NI was expected to miss its 2030 targets of a 35% reduction on 1990 levels. However, DAERA have estimated that emissions reductions will reach 37% by 2030.<sup>51</sup>

That being said, if NI is to reach the more ambitious target of 82% by 2050 and an interim target of 48% by 2030, there are a number of policy gaps across sectors that need addressed in a holistic manner. Some of the following more specific gaps have

<sup>51</sup> DAERA (2020) Northern Ireland Greenhouse Gas Projections based on 2017 GHG inventory <https://www.daera-ni.gov.uk/news/northern-ireland-greenhouse-gas-projection-statistics-released>

been identified by the CCC in its 2019 [Reducing emissions in Northern Ireland](#) in the following areas:

- Developing a route to market for low-cost intermittent renewables, in particular onshore wind;
- replace the common agricultural plan payments with payments that are linked to agricultural emissions reductions and sequestration;
- increase the rate of tree planting;
- introduce a policy to incentivise homeowners to install low-carbon heaters, replace oil boilers with heat pumps;
- develop policy for delivering energy efficient improvements in homes targeted at low income households; and
- assist in more rapid deployment of electric vehicles.

**Members may want to explore further detail on these with the CCC.**

## 5 Technology

When trying to cut emissions, approaches can be taken to reduce existing emissions, through the replacement of carbon intense practices and technologies with low carbon alternatives and an increase in the use of renewable energy. Approaches can also be taken to actively remove or store emissions that have been produced. The CCC states that the focus for the UK during the 2020s should be as follows:

*The UK must build supply chains and new markets for low-carbon consumer offerings (e.g. electric cars and heat pumps) so that these can scale from being niche offerings to dominate the market and fully push out high-carbon alternatives by 2030 or soon after. Alongside, we must develop and scale up new options for industrial decarbonisation such as carbon capture and storage (CCS), low-carbon hydrogen and engineered emissions removals. Tree planting rates must increase from 13,000 hectares per year today to 30,000 hectares per year by 2025 in line with the Government's commitment and continue to grow to 50,000 hectares per year by 2035.<sup>52</sup>*

In its [Advice Letter](#) on NI's net zero contribution, the CCC suggested a number of approaches that include both reduction and removal. At the request of the AERA Committee, the following section explores examples of "Greenhouse Gas removal

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<sup>52</sup> CCC ( December 2020) Policies' for the Sixth Carbon Budget and Net Zero <https://www.theccc.org.uk/wp-content/uploads/2020/12/Policies-for-the-Sixth-Carbon-Budget-and-Net-Zero.pdf>

technologies” as referred to in both the CCC letter and DAERA response on the NI contribution to UK Net Zero.

Firstly, by way of context, the next section gives a brief description of renewable energy use and sources currently used in NI. This information is provided through a combination of Department for the Economy Statistics Reports and previous RaiSe papers produced for the Economy Committee.

## 5.1 Renewable energy use in NI

Renewable energy use, monitoring and reporting falls under the remit of DfE. However, the following section gives a brief summary of NI’s status in terms of renewable energy use and the main sources.

### 5.1.1 Current use and targets

Between 2010 and 2020, renewable energy development in Northern Ireland (NI) has been largely steered by two targets:

- Achieving 40% electricity consumption from renewable generation by 2020; and,
- Achieving 10% heat consumption from renewable generation by 2020.

Both targets were part of the Strategic Energy Framework 2010 to 2020. The DfE is about to launch a new Energy Strategy, which will set the framework for renewable development in NI potentially up to 2050.

The 40% target for renewable electricity was achieved ahead of schedule, and has been surpassed. The latest figure is 47.7% (October 2019 - to September 2020). NI has shown a marked increase in electricity generated from renewable energy sources, from below 10% in 2010 to 47.7% in 2020<sup>53</sup>.

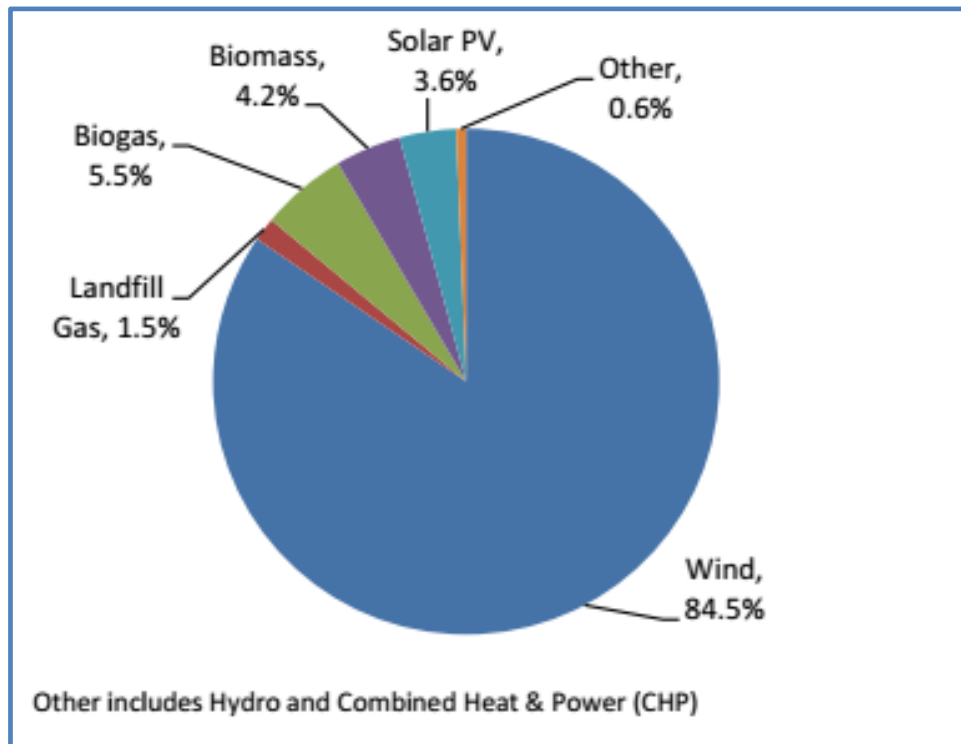
While NI has had success in terms of renewable electricity generation, the renewable heat target was missed. According to RaiSe paper [Renewable energy: background scoping paper](#) (2020), similar figures and comparisons on renewable heating sources and load are not available due to not being measured. However, DfE estimates that NI is reliant on oil and gas for much of its heating.

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<sup>53</sup> DfE Electricity Consumption and renewable generation October 2019 to September 2020 (Issue 17) <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Issue-17-electricity-consumption-and-renewable-generation-northern-ireland-october-2019-to-september-2020.pdf>

### 5.1.2 Sources of renewable energy

**Figure 3: Renewable Electricity Generation by Type of Generation (October 2019 to September 2020)**



Source: DfE Issue 17 (Dec 2020)<sup>54</sup>

Figure 3 illustrates that in 2020 the sources of renewable energy were as follows: Wind the highest with 84.5%, Biogas with 5.5%, Biomass with 4.2%, solar with 3.6%, landfill gas 1.5% and other (hydro, CHP) 0.6%.

Whilst wind (particularly onshore) appears to be the dominant source, the latest DfE Statistical Report (Issue 17) states that the other non- wind sources have seen an increase in more recent years. However, offshore wind has not been developed<sup>55</sup>.

Microgeneration (with capacity 50Kw or less) and non-export generating stations (stations that are unable to export electricity to the grid) are not covered by the DfE Statistical Reports, due to lack of available data. However, estimates provided by Ofgem from the Renewable Obligation Certificates (ROCs) register suggest these make up 3.8% of the renewable generation volume<sup>56</sup>.

<sup>54</sup> <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Issue-17-electricity-consumption-and-renewable-generation-northern-ireland-october-2019-to-september-2020.pdf>

<sup>55</sup> RalSe (2020) [Renewable energy: background scoping paper](#)

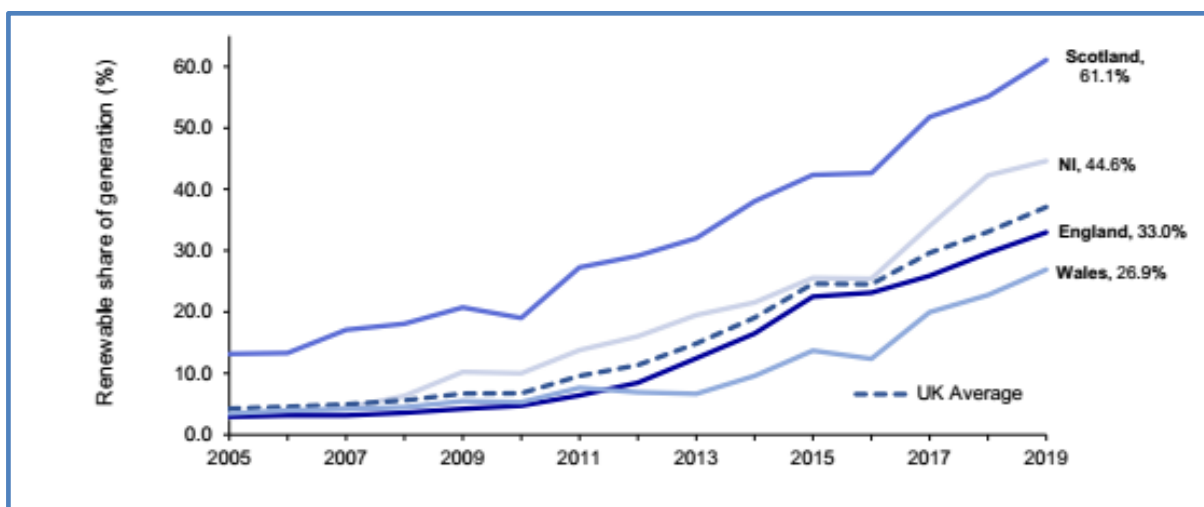
<sup>56</sup> DfE (Issue 17) p.7 <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Issue-17-electricity-consumption-and-renewable-generation-northern-ireland-october-2019-to-september-2020.pdf>

The latest statistics also detail that 46.1% of electricity consumption was generated by local sourced renewable energy, showing a slight increase on the previous report.

### How is NI doing?

As shown in Figure 4, Scotland has the highest renewable share of electricity generation with 61.1% (up 6 percentage points on 2018)). NI is next with shares of 44.6% (up 2.4pp), 33% in England (up 3.4pp) and 26.9% in Wales (up 4.1pp).

**Figure 4: Renewable share of electricity generation by country, 2005 to 2019**



Source: DBEIS (Dec 2020)<sup>57</sup>

## 5.2 Greenhouse Gas Removal Technologies

In a letter to the AERA Committee (February 2020), DAERA provided information in response to the [CCC's Letter on NI's net zero contribution](#). The letter made reference to "greenhouse gas removal technologies" in the following way:

*Whilst it is essential to reduce the level of emissions released into our environment we also have the opportunity to implement measures to use new technologies that remove and store our greenhouse gases. However it is important that these technologies are effective and cost efficient. We are aiming towards an all UK net zero target and Northern Ireland will have to make a significant contribution for this to be achieved. For Northern Ireland to achieve net zero it would lead to requiring a much greater than equal share of greenhouse gas removal technologies being located in Northern Ireland. Locating such technologies in Northern Ireland would be sub-*

<sup>57</sup> DBEIS (Dec 2020) <https://www.gov.uk/government/statistics/energy-trends-december-2020-special-feature-article-electricity-generation-and-supply-in-scotland-wales-northern-ireland-and-england-2016-to-20>

*optimal and unlikely to be cost effective and ultimately could be detrimental in achieving the UK net zero target.*

### 5.2.1 Carbon Capture and Storage

According to the CCC Letter<sup>58</sup>, greenhouse gas removals technologies include carbon capture and storage (CCS) such as bioenergy with CCS (BECCS) and direct air CO<sub>2</sub> capture with storage (DACCS) (see information Box 3):

#### Box 3

##### What is CCS?

According to the [International Energy Agency](#) and [HoC Library](#): Carbon capture and storage (CCS) refers to the process by which carbon dioxide (CO<sub>2</sub>), that would have been released into the atmosphere from industrial waste gases, is captured, compressed into a liquid state, transported via pipeline, ship or road, and pumped into a geological storage site (e.g. depleted oil and gas fields or deep saline aquifer).

According to the [London School of Economics and the Grantham Institute](#) (2018), it can capture upwards of 90% of CO<sub>2</sub> released through, for example, the burning of fossil fuels or industrial cement production.

##### BECCS

Bioenergy and carbon capture and storage (BECCS) is the process by which CO<sub>2</sub> is absorbed via photosynthesis into organic matter such as plants or food waste (biomass). The biomass is then either burnt or converted to generate energy (bioenergy), with the resulting CO<sub>2</sub> being captured and stored. There are concerns around the sustainability and true carbon neutrality of BECCS (e.g. land use conflicts, often spans multiple geographical regions).

See: [BECCS deployment: a reality check](#) (2018).

The [UK Energy Research Centre](#) suggests that further research is needed in relation to costs with estimates ranging from £12/tCO<sub>2</sub> and as high as £314/tCO<sub>2</sub>

##### DACCS

Direct Air carbon capture and storage (DACCS) is described by [Nature Communications](#) (2019) as the removal of CO<sub>2</sub> from the atmosphere using a solid, liquid or gas sorbent. At an early stage of development, in comparison to BECCS. It is referred to as a complementary technology as it can capture CO<sub>2</sub> by distributed sources (e.g. aviation) and can be deployed in a modular manner, requiring less land than other technologies.

According to the [UK Energy Research Centre](#), issues surround the feasibility of DACCS due to the dilute nature of ambient CO<sub>2</sub>, leading to energy-intensive extraction and large volumes of air to produce pure CO<sub>2</sub>. This makes it difficult to quantify costs and mitigation potential. Also, further investigation is needed into the environmental impacts.

See: [Bioenergy with carbon capture and storage, and direct air carbon capture and storage](#) (April 2019).

<sup>58</sup> CCC (December 2020) Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA  
<https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/>



## 5.2.2 CCS role in combating climate change

The CCC considers CCS playing an integral role in the UK's transitions to Net Zero<sup>59</sup> as it has the ability to reduce emissions across numerous sectors (e.g. manufacturing and construction, waste, transport and energy). There are 21 operational facilities globally<sup>60</sup> but currently there are no operational CCS sites in the UK. This is principally due to substantial infrastructure costs and lack of commercial viability<sup>61</sup>, however the UK Government aims to deploy CCS at scale during the 2030s if there are substantial cost reductions<sup>62</sup>. The 2020 Budget announced an £800 million CCS Infrastructure Fund to establish at least two UK CCS sites, one by mid-2020s and a second by 2030, as part of the efforts to 'growing a greener economy'.<sup>63</sup>

In its Fifth Carbon Budget Report Cost Effective, the CCC states that its own estimates<sup>64</sup> and those by the Energy Technologies Institute (ETI)<sup>65</sup> indicate that the costs of meeting the UK's 2050 target (80% at the time of writing) could almost double without CCS. At the global level, the IPCC has estimated that its absence could increase costs by over 100%<sup>66</sup>.

## 5.2.3 CCS in NI

The CCC has explained that NI is not well suited for CCS due to the lack of CO<sub>2</sub> storage sites. Which in turn requires captured CO<sub>2</sub> to be transported to a storage site, incurring additional costs.

Figure 5 shows possible locations for CO<sub>2</sub> storage, none of which currently includes NI or Wales. The CCC explains that Wales and NI are less well suited for CCS than England and Scotland for the following reasons:

- If CCS is used in places that are not located near to CO<sub>2</sub> storage sites, the CO<sub>2</sub> that is captured must be used or transported to a storage site. This will incur higher costs (e.g. the additional costs of shipping CO<sub>2</sub> at around £10-20/tCO<sub>2</sub>) and may make other solutions that do not require CCS such as electrification more cost competitive.

<sup>59</sup> CCC (December 2020) Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA

<https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/>

<sup>60</sup> International Energy Agency <https://www.iea.org/fuels-and-technologies/carbon-capture-utilisation-and-storage>

<sup>61</sup> Department for Business, Energy and Industrial Strategy 2018 Clean Growth Strategy

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/700496/clean-growth-strategy-correction-april-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf)

<sup>62</sup> Department for Business, Energy and Industrial Strategy The UK Carbon Capture Usage and Storage deployment pathway: an action plan

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/759637/beis-ccus-action-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759637/beis-ccus-action-plan.pdf)

<sup>63</sup> HM Treasury 2020 Budget <https://www.gov.uk/government/publications/budget-2020-documents>

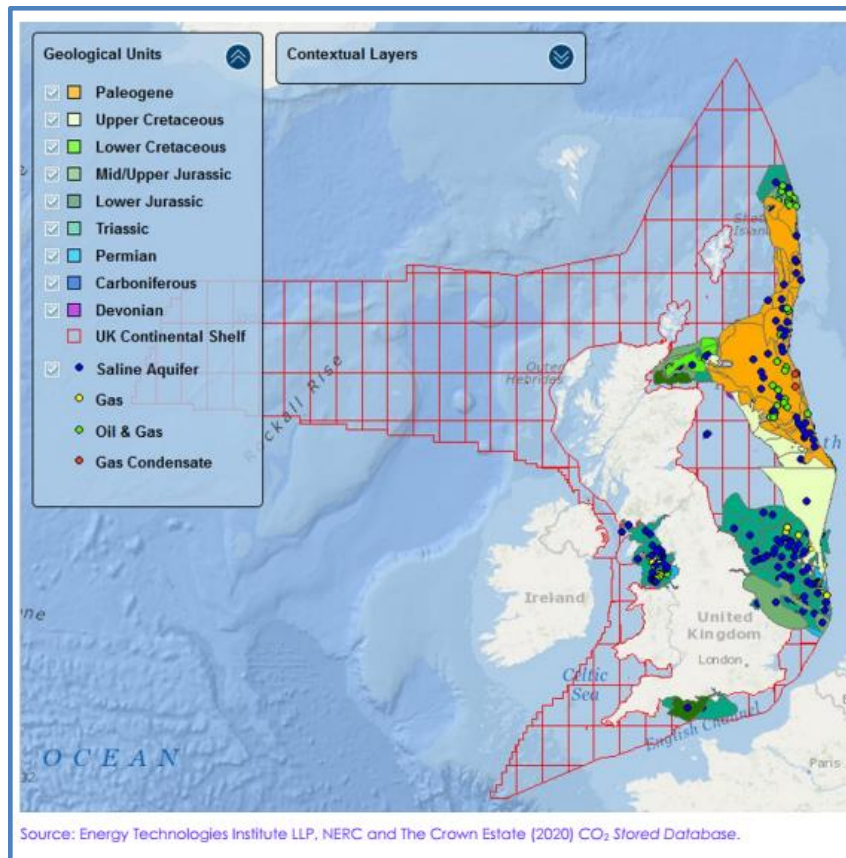
<sup>64</sup> CCC (2012) *The 2050 target – achieving an 80% reduction including emissions from international aviation and shipping* [https://www.theccc.org.uk/archive/aw/IA&S/CCC\\_IAS\\_TechRep\\_2050Target\\_April2012.pdf](https://www.theccc.org.uk/archive/aw/IA&S/CCC_IAS_TechRep_2050Target_April2012.pdf)

<sup>65</sup> ETI (2015) *Building the UK carbon capture and storage sector by 2030 – Scenarios and actions* <http://www.eti.co.uk/wp-content/uploads/2015/03/CCS-Building-the-UK-carboncapture-and-storage-sector-by-2013.pdf>

<sup>66</sup> 138%, IPCC (2014) *Fifth Assessment Report – Synthesis Report*. Available at [http://ar5-syr.ipcc.ch/ipcc/ipcc/resources/pdf/IPCC\\_SynthesisReport.pdf](http://ar5-syr.ipcc.ch/ipcc/ipcc/resources/pdf/IPCC_SynthesisReport.pdf)

- Large parts of Northern Ireland have more limited access to CO<sub>2</sub> storage sites and therefore do not appear to be the most ideal places to locate BECCS power plants

**Figure 5: Map of potential CO<sub>2</sub> storage locations around offshore UK**



The Reducing Emissions in Northern Ireland<sup>67</sup> report compiled by the CCC recommended that Northern Ireland should be ready to deploy CCS at scale in the 2030s as part of the UK's Net Zero targets<sup>68</sup>. It is important to note that the UK Government holds reserved powers regarding CCS, but planning and environmental permits are devolved<sup>69</sup>.

However, earlier research from 2009 on the assessment of the potential for geological storage of carbon dioxide in Ireland and Northern Ireland, suggests that there are four potential CO<sub>2</sub> storage sites in Northern Ireland<sup>70</sup>;

<sup>67</sup> Committee on Climate Change, Reducing emissions in Northern Ireland, February 2019  
<https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/>

<sup>68</sup> Committee on Climate Change, Net Zero - The UK's contribution to stopping global warming, May 2019  
<https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

<sup>69</sup> CCC (December 2020) Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA  
<https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/>

<sup>70</sup> Energy Procedia, Lewis et al., Assessment of the potential for geological storage of carbon dioxide in Ireland and Northern Ireland, February 2009. Available at <https://www.sciencedirect.com/science/article/pii/S1876610209006766>

- Raithlin basin
- Portpatrick/Larne basin
- Peel basin
- Lough Neagh

The first three sites have a combined theoretical storage capacity of 70,000 million tonnes (Mt) CO<sub>2</sub>, and a further 2000 Mt CO<sub>2</sub> theoretical capacity for Lough Neagh<sup>71</sup>.

However, the study noted there are potential major risks associated with developing the Portpatrick/Larne basin due to the lack of geological suitability and potential mixing of injected CO<sub>2</sub> into the water supplies<sup>72</sup>.

Clearly further investigation needs to be given to the potential of NI as location in line with the more recent problems highlighted by the CCC.

**Members may want to explore further with the CCC why NI has little potential for CO<sub>2</sub> storage compared to parts of the UK? What plans and budget is needed to improve NI as a location for such technology, especially in light of the CCC's 2019 report recommendation for NI to be ready to deploy CCS in 2030?**

### 5.2.3 Carbon sequestration

Other areas of focus suggested by the CCC in agriculture and land use include reducing the emissions given off by using low carbon farming practices and carbon sequestration (Box 4) through afforestation, peatland restoration to try and remove emissions from the atmosphere and store them in soils and the landscape:

*Low-carbon farming practices, afforestation, agroforestry and peatland restoration all have a crucial role to play in reducing emissions by 2050. The framework to follow the Common Agricultural Policy in each devolved administration provides an opportunity for more closely linked financial support to agricultural emissions reduction and increased carbon sequestration.*<sup>73</sup>

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<sup>71</sup> Energy Procedia, Lewis et al., Assessment of the potential for geological storage of carbon dioxide in Ireland and Northern Ireland, February 2009

<sup>72</sup> Energy Procedia, Lewis et al., Assessment of the potential for geological storage of carbon dioxide in Ireland and Northern Ireland, February 2009

<sup>73</sup> CCC (December 2020) **Letter: Lord Deben, Climate Change Committee to Edwin Poots MLA**  
<https://www.theccc.org.uk/publication/letter-lord-deben-climate-change-committee-to-edwin-poots-mla/> p.41

**Box 4****Carbon sinks and Carbon sequestration**

The [Sustainable Agricultural and Land Management Strategy](#) describes carbon sequestration as the potential to store carbon within agricultural soils and farmed landscapes (carbon sinks). Woodland performs an important role as a carbon sink in locking carbon in its woody biomass and within the soil. Soils may store many times more carbon than above the ground vegetation. Peat soils are particularly important and cover around 24.6% on NI. However, many in NI have been drained and dried out leading to oxidation of carbon and a reduced ability to sequester more.

Grasslands can also act as major carbon sinks depending on soil type and management. However, over management can greatly reduce grassland ability. A study mentioned in the Strategy suggests that grassland carbon sinks have the potential of “*offsetting up to 30% of GHG emission from many grass-based ruminant production systems.*” However further research is needed in this area to fully appreciate grassland’s potential and contribution to offsetting emissions.

### 5.3 Considerations

When considering appropriate technologies and approaches for NI to contribute to the UK net zero target, it’s important to understand the unique circumstances in NI, as these may ultimately determine what is appropriate for NI and what is not. Some of these unique circumstances have been highlighted by the CCC:

- **Ability to decarbonize the main emitting sector:** Nearly 30% of all greenhouse gas emissions in Northern Ireland are from agriculture, compared to 10% in the rest of the UK. The farming sector in NI is also much more heavily livestock-based with numbers of cattle and sheep having doubled since the Second World War<sup>74</sup>. Compared to arable crop based farming in the rest of the UK, Livestock- based agriculture is much more carbon intensive and its production of high levels of nitrogen emissions are a cause for concern<sup>75</sup>. A complete change in farming practices would be required in NI which makes decarbonisation much more difficult compared to other sectors and jurisdictions.
- **Decarbonisation of the power sector:** Unlike the other devolved administrations, Northern Ireland has devolved responsibility for energy policy. Northern Ireland is a member of the all-island Integrated Single Electricity Market (I-SEM) shared with the Republic of Ireland. Energy policy must enable an efficient, low carbon interconnected energy market to operate on both sides of the border. For the UK to

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<sup>74</sup> Sustainable Agriculture and Land Management Strategy (p.15)

<sup>75</sup> Ibid p.26

achieve Net Zero emissions, the CCC states that NI must achieve equally ambitious decarbonisation in the power sector.

- **Lack of gas infrastructure:** The gas network in Northern Ireland is not nearly as extensive as in GB, with only 24% connected to gas and the rest heated by oil or electric sources. Compared to 87% connected to gas in the UK as a whole. Some pathways to decarbonise heat that rely on modifying the gas network may be less suitable for Northern Ireland. However, the CCC suggests that significant emissions savings could be made by switching conventional oil boilers to heat pumps.
- **Lack of electric charging infrastructure:** The geographical size of Northern Ireland presents an opportunity for more rapid uptake of electric vehicles because range anxiety may be less of a concern for consumers. However, this is offset by the prevalence of longer cross-border journeys and the need for adequate public charging infrastructure on both sides of the border.
- **The land use, land-use change and forestry sector:** Unlike the rest of the UK, the LULCF sector is a net carbon source rather than a net sink. Forest coverage is around 40% lower in Northern Ireland than the UK as a whole. The future inclusion of emissions from degraded peatland in the UK emissions inventory could add around 9% to Northern Ireland's total emissions - higher than in England and Wales, but lower than Scotland.

### 5.3.1 Further considerations:

- **Woodland and forestation** - the CCC highlights the importance of woodland in sequestering emissions and has identified plans to substantially increase the amount of woodland cover in the UK. NI already has considerably less woodland cover in comparison, due to the nature of livestock farming and dependence on grassland:
  - **Has the CCC taken into consideration the potential contribution grassland sequestration in NI can make to offsetting emissions?**
- **Future agricultural policy** – the advice from the CCC suggests that there will need to be a substantial change in farming approaches in NI, to allow for more forestation and increased use of less carbon intensive practices. Agricultural policy in NI is at a stage of transition post Brexit:<sup>76</sup>
  - **Will a new Climate Change Act take into consideration new agricultural policy requirements, or the other way around?**

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<sup>76</sup>Ministerial Statement Northern Ireland Assembly, Official Report (Hansard), Tuesday 17 November 2020 Volume 133, No 2, page 34 <http://data.niassembly.gov.uk/HansardXml/plenary-17-11-2020.pdf>

- **Is the future agricultural policy to be considered the main vehicle to creating change in farming practices towards meeting NI's net zero contribution?**
  - **How much can NI de-carbonise agriculture? Does the CCC suggest a move away from livestock farming?**
  - **Based on NI's past and current practices (livestock and pasture), does NI have suitable soil to grow more crops (e.g. for bioenergy) and increase forestation, to make a considerable enough impact?**
  - **How will changes in practice be encouraged e.g. grants or enforcement?**
  - **Who will provide for grants?**
  - **In its advice to Wales, the CCC has suggested that under the right policies, forestation grants can provide a source of revenue for farmers. Can the same be said for NI farmers? And will this be enough to help offset any costs associated with change in practices and new technologies?**
- **The Ireland/NI Protocol** - Has the CCC considered the impact of the Ireland/Norther Ireland Protocol, especially in terms of difficulties?:
- **e.g. importing trees from the UK and the impacts this is having on DAERA's forestation programme and the required increases in forestation that the CCC suggest is needed in NI?**
  - **What about the import of new technologies etc. and ensuring they meet EU standards?**
  - **The fact that large power stations in NI remain under the EU ETS, and how this and future CFs might impact net zero contributions,**
  - **Compliance and oversight complexities with EU Commission and Protocol related legislation, potential OEP oversight on non- Protocol legislation and international obligations, and NIEA as the main regulator in NI?**
- **Infrastructure** - A number of the approaches to reaching UK net zero and NI's contribution require better infrastructure, e.g. gas network and electric charging points. This will require significant investment during a time when economic recovery from Brexit and COVID-19 are paramount.

The CCC emphasise the importance of CCS and hydrogen use for reaching net zero. In fact, the UK Government's Hydrogen Strategy is due for publication in Spring 2021<sup>77</sup> However, the CCC has stated that NI is not a suitable location for CCS.

<sup>77</sup> CCC Sixth Carbon Budget Report <https://www.theccc.org.uk/publication/sixth-carbon-budget/> p.270

- **Has consideration been given by the CCC as to whether NI has the required and sufficient infrastructure to transport hydrogen etc., given the poor gas network currently in NI?**
  - **Has consideration been given as to whether our electric charge network is extensive and efficient enough to deal with encouraged up take of electric cars (and eventual phase out of petrol and diesel cars in the UK)?**
  - **Onshore wind appears to be the most utilised form of renewable energy production in NI, however has consideration been given to NI's need and ability to expand in this area, e.g. wind farm/turbine saturation and connection capacity to the electric network?**
- **Costs** - In the latest advice to Wales, the CCC gave an appreciation of the potential costs for Wales in reaching net zero. Understanding that this is not comparable to NI due to different farming practices:
- **What consideration has been given to the costs for NI and its unique circumstances?**
  - **Given it's a long-term programme to 2050, what is the UK proposing to help support the uptake of new technology in terms of production and supporting demand through creating a market?**
  - **The 2020 Budget set aside £800 million for developing CCS in the UK by 2030. If some of these technologies aren't suitable in NI, what's the alternative? What is provided in any future budget for developing alternatives such as offshore wind, tidal? Will there be anything to help develop NI as a location for GHG removal technologies going forward?**

## Appendix 1: Climate Change Programmes/Strategies/Initiatives

Department	Programme/strategy/initiative	Detail
Executive	<a href="#">The Draft Programme for Government Framework</a>	<p>Outcome 2 is “We live and work sustainably - protecting the environment.” Under Outcome 2, Indicator 29 (greenhouse gas emissions) is a reduction of 1% per year in emissions to 2021, or reduction of 1 MtCO<sub>2</sub>e (5%) by March 2021. DAERA is also required to report on GHG emissions as an indicator under Outcome 2.</p> <p>A <a href="#">consultation</a> on an outcomes framework for a new PfG is currently out until 22 March 2021. Climate Change is one of the areas identified for developing outcomes in terms of encouraging a green growth approach to reduce emissions, protect the environment and encourage sustainable economic growth.</p>
	<a href="#">New Decade, New Approach</a>	<p>Published in January 2020, the new restoration deal states a number of measures and actions to be taken by the NI Executive in relation to addressing climate change and emissions, these include:</p> <ul style="list-style-type: none"> <li>• The Executive’s strategies to reduce carbon emissions will be reviewed in light of the Paris Climate Change Accord and the climate crisis.</li> <li>• A new Energy Strategy will set ambitious targets and actions for a fair and just transition to a zero carbon society.</li> <li>• The Executive should bring forward a Climate Change Act to give environmental targets a strong legal underpinning.</li> <li>• The Executive will establish an Independent Environmental Protection Agency to oversee this work and ensure targets are met.</li> </ul>



	<a href="#">Investment Strategy 2011-2021</a>	This states that in order to meet climate change targets under the UK Act (at the time), NI must become more energy efficient, switching fuels, changing transport modes and replacing inefficient infrastructure. It also identifies climate change as one of the priority areas for investment under the environment.
<b>Cross - departmental</b>	<a href="#">Northern Ireland Climate Change Adaptation Programme 2019-2024</a>	The UK Climate Change Act 2008 requires NI departments to prepare an Adaptation Programme. In response to this, DAERA takes the lead in the development of the recently published <a href="#">Northern Ireland Climate Change Adaptation Programme 2019-2024</a> (NICCAP2). This is NI's second plan covering the next 5 years. It highlights the priority areas requiring urgent adaptation action across the NICS Departments. It sets the policies, strategies, actions for NICS Departments to address climate change. It also contains chapter for 'Civil Society and Local Government'. It is hoped this will raise awareness and encourage wider society (sectors outside of government) and local government of the need to adapt and address climate change. <sup>78</sup>
	New GHG Emission Reductions Plan	To aid the NICS wide response to climate change, DAERA takes the lead on the cross-departmental working group 'Future Generations Working Group on Climate Change' (FGWG CC). DAERA is taking the lead, through this group, on the development of a draft cross-Departmental GHG Emissions Reductions Plan. According to the latest DAERA discussion document:  <i>The plan will set out how the Northern Ireland Government intend to reduce emissions in the following GHG emission sectors: agriculture; energy; transport; business; residential; land use change; public; waste management; and</i>

<sup>78</sup> NI Climate Adaptation Programme (p.24) <https://www.daera-ni.gov.uk/publications/northern-ireland-climate-change-adaptation-programme-2019-2024>

		<p><i>industrial processes. The plan once drafted and agreed by the group will be submitted to the Northern Ireland Executive for their agreement.<sup>79</sup></i></p>
	<p><a href="#">Green Growth Strategy</a></p>	<p>DAERA is also leading on development of the Executive’s Green Growth Strategy and Delivery Framework in partnership with other departments, local government and stakeholders from across the business and voluntary and community sectors. DAERA Minister describes it as::</p> <p><i>The Executive’s overarching multi-decade Green Growth Strategy and Delivery Framework for Northern Ireland is aiming to transform our society towards net zero by 2050, protect and enhance our environment and deliver sustainable economic growth.<sup>80</sup></i></p> <p>In developing the Green Growth Strategy, DAERA appreciates that a holistic approach is needed across Departments in reaching net zero. DAERA has been engaging with other departments, such as Economy and Infrastructure, to align relevant policies and strategies under the Green Growth Strategy<sup>81</sup>.</p> <p>According to the latest PfG Outcomes Framework, both DAERA and DfE will bear collective responsibility for addressing climate change through adopting a green growth approach to protect the environment while creating sustainable economic growth.<sup>82</sup></p>

<sup>79</sup> DAERA Climate Change Bill Discussion Document (p.23) <https://www.daera-ni.gov.uk/consultations/climatechangediscussion>

<sup>80</sup> DAERA (Jan 2021) Poots chairs first meeting of Green Growth Inter-Ministerial Group <https://www.daera-ni.gov.uk/news/poots-chairs-first-meeting-green-growth-inter-ministerial-group>

<sup>81</sup> DAERA Climate Change Bill Discussion Document (p.23) <https://www.daera-ni.gov.uk/consultations/climatechangediscussion>

<sup>82</sup> **Consultation on the Programme for Government draft Outcomes Framework**  
<https://www.northernireland.gov.uk/consultations/consultation-programme-government-draft-outcomes-framework>

	<a href="#">New Circular Economy Strategic Framework</a>	DAERA and DfE are working to develop a framework for the Circular Economy in NI. A Cross Departmental Steering Group has been set up. A project began in 2019 and is expected to take 24 months. The aim is for increased collaboration and partnership working amongst CE stakeholders and more joined-up activity between Government Departments, local government and the private sector on CE issues.
DAERA	<a href="#">NI Greenhouse Gas Reduction Strategy and Action Plan 2011</a>	This sets out measures and actions to reduce emissions from agriculture and farm practices.
	<a href="#">Biodiversity Strategy (2015-2020)</a>	Reducing the impact of climate change is one of seven high-level challenges identified by the 2015 strategy. However, according to the <a href="#">UK Climate Change Risk Assessment: Evidence Report</a> , there has not been an assessment of the extent to which Northern Ireland's network of habitats have the ecological coherence to be resilient to future climate change, as has been done in England through the Lawton Review. <sup>83</sup>
	<a href="#">Waste Management Strategy</a>	<p>Delivery resources efficiently seeks to contribute to addressing climate change through the reduction, increase of reuse and prevention of waste. It includes reducing waste going to landfill which gives of GHGs, the use of more efficient collection methods so waste can be re used (circular economy). It also provides for the implementation of the carrier bag levy and reduction of plastic bags.</p> <p>DAERA is currently developing a new <a href="#">Waste Management Plan</a> for NI as required under the Revised WFD. It aims to consolidate the current Waste Strategy and regional waste management plans under</p>

<sup>83</sup> UK Climate Change Risk Assessment: Evidence Report (p.10) <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/national-summaries/northern-ireland-2/>

	one strategic plan with a focus on the circular economy and planning policy under one document. It will also be in line with the new Environment Strategy. Consultation finished December 2020.
<a href="#">Environment Strategy</a>	DAERA is currently developing an Environment Strategy which covers climate change mitigation and adaptation as one of its key areas. <sup>84</sup> Consultation finished February 2020.
<a href="#">NI Marine Plan</a>	DAERA is the Marine Plan authority and has consulted on a Draft Marine Plan for NI. Objective 7 of the Plan is to contribute towards climate change mitigation and adaptation measures. The Plan states that public authorities must consider the potential impact of any proposals on greenhouse gas emissions and the proposals ability to adapt to a changing climate. <sup>85</sup>
<a href="#">Environmental Farming Scheme</a>	<p>Under the current Rural Development Programme 2014-2020, the EFS encourages environmental farming practices to enhance habitat and biodiversity conservation which help address climate change. For example, the management of Natura 2000 conservation sites and peatlands and the protection of soils in order to receive single farm payment. Other schemes under the RDP help to encourage the use of more sustainable machinery, improve resource efficiency etc. For example the Agri-Food Co-operation Scheme (AFCS) and the Farm Business Improvement Scheme (FBIS)<sup>86</sup>.</p> <p><b>NI Future Agricultural Policy Framework</b> – Expected to be published early 2021<sup>87</sup>. Minister Poots gave a brief outline of the policy proposals which included environmental sustainability and improved resilience. However, no further detail on exactly what these priorities will provide for has been given as yet.</p>

<sup>84</sup> DAERA (2019) Environment Strategy for Northern Ireland – Public Discussion Document <https://www.daera-ni.gov.uk/consultations/esni-public-discussion-document>

<sup>85</sup> Draft Marine Plan Document (p.35) <https://www.daera-ni.gov.uk/articles/marine-plan-northern-ireland#toc-0>

<sup>86</sup> DAERA, RDP 2014-2020 <https://www.daera-ni.gov.uk/articles/2014-2020-rural-development-programme#toc-1>

<sup>87</sup> [Northern Ireland Assembly, Official Report \(Hansard\), Tuesday 17 November 2020 Volume 133, No 2, page 34](#)

	<p><a href="#">Going for Growth Strategy</a></p>	<p>Is a strategy action plan in support of NI’s agri-food industry. Under the strategy’s Action Plan, one of the recommendations is sustainable growth by encouraging consideration of sustainable production and intensification on-farm, more efficient use of resources and more suitable industry incentives for renewable energy. It also seeks to promote NI as a low carbon location for food production<sup>88</sup>.</p>
	<p><a href="#">Sustainable Agricultural and Land Management Strategy</a></p>	<p>As recommended under the Going for Growth Strategy, this was produced by an established Independent Expert working Group and presented to DAERA in 2016. It states that the challenge of addressing climate change must be considered in tandem with the need to meet the projected 70% increase in food demand by 2050. As such, the Strategy delivers ways that improve farm incomes and environmental performance simultaneously. It made an addition to the Strategy in 2017 “<a href="#">Making Ammonia Visible.</a>”</p>
	<p><a href="#">Efficient Farming Cuts Greenhouse Gases Implementation Plan 2016-2020</a></p>	<p>The plan (and its associated documents) focus on encouraging the implementation of a series of on-farm efficiency measures which can improve farm performance and reduce the carbon intensity of local food production and signposts the support available to facilitate this.</p>
	<p><a href="#">Forests for Our Future</a></p>	<p>Minister Edwin Poots, MLA launched the ‘Forests for Our Future’ programme, in March 2020, which aims to plant 18 million trees to create 9,000 hectares of new woodland over the next decade to help meet the UK Government net-zero carbon target.</p>
	<p><a href="#">Code of Good Agricultural Practice for the Reduction of Ammonia Emissions, CAFRE</a></p>	<p>This is a guidance document which explains how farmers, growers, land managers, advisers and contractors can minimise ammonia emissions from agriculture.</p>

<sup>88</sup> Gowing for Growth Strategy p.74/75 <https://www.daera-ni.gov.uk/publications/going-growth-strategic-action-plan-support-ni-agri-food-industry>

<b>Economy</b>	<a href="#">Strategic Energy Framework</a>	<p>This ran from 2010 to 2020. Under goal 4 this Framework flags the direction for NI energy policy to 2020 in relation to enhancing sustainability and addressing climate change. For example, through the promotion of energy efficiency, renewable electricity, renewable energy sources and natural gas. It states that NI will contribute to the UK’s energy saving target of 18% by 2020 (equating to 1.5% energy savings per year at UK level from a 2007 baseline) as set out in the UK’s National Energy Efficiency Action Plan.</p> <p>However, this Framework is being replaced with a new <a href="#">Energy Strategy</a> which finished call for evidence stage in March 2020. The call for evidence Summary Report states that a new energy strategy will identify potential pathways to reach a net zero 2050 target for the energy sector in NI while meeting the energy needs of the population sustainably and cost-effectively.</p>
	<a href="#">Economic Strategy</a>	<p>Published in 2012, this provides detail on the Executive’s proposals for growing a prosperous local economy to 2030. It explores options for exploiting market opportunities in emerging sectors aimed at addressing climate change, such as low carbon/green economy. A new draft Strategy (<a href="#">Economy 2030</a>), was published in 2017, however it never progressed. There are current calls to develop a new Economic Strategy for NI, especially in light of COVID-19 and Brexit.</p>
	<a href="#">New Skills Strategy</a>	<p>DfE is in the midst of developing a Skills Strategy for NI. Advice given by OECD in terms of what needs to be addressed is the fact that climate change action will have substantial implications for labour market demand. With emphasis on ‘green jobs’ and existing jobs beings transformed in order to meet new demands.</p>

<b>Finance</b>	<a href="#">Energy Management Strategy and Action Plan</a>		The Strategy seeks to demonstrate the Government’s commitment to emission reductions as required under both the draft PfG indicator 29 (Greenhouse gas emissions) and the UK wide Climate Change Act to reduce greenhouse gas emissions by at least 80% by 2050. One of the ways it hopes to contribute is an objective to lower net energy consumption by 30% by 2030 across Government (from a 2016/17 baseline year).
	<a href="#">Energy efficiency in public buildings</a>		As part of its climate change programme, the government aims to improve the energy performance of the buildings they occupy. This will also reduce the emission of greenhouse gases which are contributing to global warming, as well as reducing costs, thereby releasing resources for improved service provision.
	<a href="#">Building Regulations</a>		Technical Booklet <a href="#">F1 (dwellings)</a> and <a href="#">F2 (non-dwellings)</a> regulations set the standards for the energy performance of both new and existing buildings. The main compliance target for new build dwellings in Northern Ireland are carbon emissions. Since December 2020, all new buildings must be ‘ <a href="#">Nearly zero-energy buildings</a> ’ (NZEB).
<b>Infrastructure</b>	Flooding	<a href="#">Draft Flood Risk Management Plans for 2015 to 2021</a>	Produced by the DfI Rivers Agency to meet the requirements of the EU Flood Directive, were subject to consultation in the first six months of 2015. Final Plans were completed and published in December 2015 and are available online. The plans take into account current risk as well as climate change for a medium probability scenario for 2030, as included in the updated flood maps <sup>89</sup> .

<sup>89</sup> <https://www.infrastructure-ni.gov.uk/articles/what-flood-maps-ni>

		<a href="#">Homeowner Flood Protection Grant Scheme</a>	Was launched by DARD (now DfI) Rivers Agency in January 2016 and is currently being implemented. This will provide grant assistance to facilitate the fitting of Individual Property Protection measures to homes that meet the eligibility criteria.
	Water	<a href="#">Water UK – Net Zero 2030 Routemap</a>	This UK wide strategy includes the devolved administrations and provides water companies with a framework on which to develop and cost their own net zero action plans. It states that it is in line with Northern Ireland Water’s goal to fully exploit innovative approaches to energy and new technology to reduce its carbon footprint and ultimately become carbon neutral. <sup>90</sup>
		<a href="#">A Long-Term Water Strategy for Northern Ireland (2015-2040)</a>	Published in March 2016, contains a long-term vision to manage flood risk and drainage in a sustainable manner, which will help to address the future risks from climate change.
	Planning	<a href="#">Regional Development Strategy 2030</a>	The RDS recognises climate change as a major environmental threat, therefore one of its aims is to reduce NI’s carbon footprint and facilitate mitigation and adaptation to climate change. It sets out measures on transport, energy and the location of jobs and houses to help address and adapt to climate change.

<sup>90</sup> P.7 of the UK Routemap



		<a href="#">SPPS</a>	<p>The Strategic Planning Policy Statement states that the planning system should help mitigate and adapt to climate change by shaping new and existing developments in ways that reduce: greenhouse gas emissions, transport needs, flooding threat and erosion, energy and heating requirements.<sup>91</sup></p> <p>The provisions of the SPPS must be taken into account in the development of local development plans (LDPs), and are also material considerations to all planning applications and appeals.</p>
Transport		<a href="#">Regional Transportation Strategy (2002-2012)</a>	Makes reference to efforts to meet the Kyoto Protocol and states that whilst seeking to meet the economic and social needs of the population, will do so in a manner that reduces the threat to the environment.
		<a href="#">NI Intelligent Transport Systems (ITS) Strategy 2025</a>	Makes reference to RDS and draft PfG objectives for climate change and emissions. Under Objective G it aims to work with others on the possible uses of ITS to mitigate the pollution effects of traffic emissions and noise.
		<a href="#">Zero and low emission buses Programme</a>	Minister Nichola Mallon announced in 2020 a £66 million investment programme for 145 zero and low carbon emission buses to deliver Green Recovery.

<sup>91</sup> SPPS p.13/14

		<p><a href="#">Green Infrastructure Initiatives</a></p>	<p>In 2020 Minister Nichola Mallon announced a series of green infrastructure initiatives including: increased pedestrianised streets and spaces in Belfast and Derry/Londonderry, pop up cycle lanes to encourage people to cycle to work and for leisure etc.</p>
		<p><a href="#">The e-car public charge point network</a></p>	<p>In 2012, the e-car NI Project consortium, (led by the Department for Regional Development, now DfI), introduced electric vehicle charging infrastructure to Northern Ireland. The e-car public charge point network in NI is owned, operated and maintained by the Electricity Supply Board (ESB). It consists of 160 double-headed 22kW fast charge points and 17 rapid charge points available at various locations across the country.</p> <p>Charge points are now also being provided independently by a range of other organisations to provide workplace access and for customers. These can be found at shopping centres, hotels and at some locations in the public sector estate.<sup>92</sup></p> <p>This will help to contribute to the <a href="#">UK's ban on petrol and diesel cars by 2030</a> – the use of oil and gas in NI is a reserved matter. The PM Boris Johnston announced the ban in 2020 as part of a "green industrial revolution" to tackle climate change and create jobs in industries such as nuclear energy.</p>
<p><b>Communities</b></p>		<p><a href="#">Boiler Replacement Scheme</a></p>	<p>This is for owner occupiers whose total gross income is less than £40,000 and is to help with the cost of replacing which are 15 years old or older with new more efficient boilers.</p>
		<p><a href="#">The Affordable Warmth Scheme</a></p>	<p>Targets low income households who experience the effects of fuel poverty and energy inefficiency. It provides grant aid to improve energy efficiency within homes.</p>

<sup>92</sup> DfI (2020) Attitudes to Electric Vehicles in Northern Ireland 2019/2020 <https://www.infrastructure-ni.gov.uk/publications/attitudes-towards-electric-vehicles-northern-ireland-20192020>

	<a href="#">Replacement Grant</a>	This grant goes towards replacing an old/energy efficient property. It helps meet the costs of replacing an old dwelling.
	<a href="#">Energy Efficiency Strategy</a>	One of the objectives of the current Strategy is to achieve progress towards a 34% improvement in the energy efficiency of the housing stock in Northern Ireland over a ten year period. However, there are plans for a new Strategy which will set out how NIHE hope to reduce carbon emissions and address fuel poverty <sup>93</sup> .
	Energy Efficiency in Social Housing programme	This is being prepared to improve the thermal performance of NIHE stock in order to reduce heat loss and energy use in its properties. The NIHE consider this a major part of its effort to contribute to decarbonisation and reducing carbon emissions to help meet the UK's 2050 Net Zero Carbon target. <sup>94</sup>
	<a href="#">Cavity Wall Insulation Action Plan</a>	Out for consultation until 31 March 2021. The aim is to improve the insulation of NIHE stock and improve their energy efficiency and energy running costs.
	<a href="#">Fuel Poverty Strategy (2012)</a>	Aim is to provide for warmer, more comfortable homes for everyone, which includes improving the energy efficiency and carbon emissions of buildings.

<sup>93</sup> NIHE 49<sup>th</sup> Annual Report 2019/2020 (p.40) <https://www.nihe.gov.uk/About-Us/Our-Mission-Vision/Our-annual-reports>

<sup>94</sup> NIHE, Cavity Wall Insulation Consultation (December 2020) (P.14) <https://www.nihe.gov.uk/Home/News/Consultation-begins-on-Cavity-Wall-Insulation>

	<a href="#">Urban Regeneration and Community Development Policy Framework</a>	It aims to encourage a society that is sustainable in its use of resources by encouraging communities to take responsibility for maintaining and caring for their environments <sup>95</sup> .
<b>Health</b>	<a href="#">Provides advice to health care professionals</a>	These provide advice to health care professionals on dealing with extreme weather events. For example, information leaflets on caring for patients before and during heatwaves. It considers the frequency of heatwaves to increase due to climate change.
	<a href="#">Severe Weather</a>	The Public Health Agency has compiled public health information to assist the public during adverse weather e.g. cold and freezing temperatures, no electricity or mains water and flooding.
<b>Other</b>	<a href="#">Northern Ireland Sustainable Energy Programme</a>	<p>Energy Saving Trust is the programme administrator of the Northern Ireland Sustainable Energy Programme (NISEP), on behalf of the Utility Regulator. The <a href="#">Utility Regulator</a> is an independent non-ministerial government department responsible for regulating Northern Ireland’s electricity, gas, water and sewerage industries. It works with the DfE and Dfl. NISEP is an £8 million fund, which is collected from all electricity customers (both domestic and commercial) through a public service obligation (PSO) and is used to provide funding for energy efficiency schemes across Northern Ireland.</p> <p>The majority of the funding has been targeted at vulnerable customers/householders to help install new energy efficient heating systems, cavity wall insulation and loft insulation. It also has schemes to help businesses install carbon savings technologies such as variable speed drives, intelligent heating controls and LED lighting.</p>

<sup>95</sup> p.4

